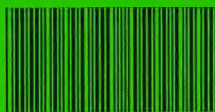


T.G. LAB G. QUIRK

METER UNIT
TYPE 70 and 70/R

INSTRUCTION MANUAL

MP MASTER



MA23482

DYMAR ELECTRONICS LIMITED,
REMBRANDT HOUSE, WHIPPENDELL ROAD, WATFORD, HERTS, ENGLAND.

D Y M A R

T. G L A B G. Q U I R K

M E T E R U N I T
T Y P E 7 0 a n d 7 0 / R

C O N T E N T S

1. G e n e r a l
2. S p e c i f i c a t i o n
3. O p e r a t i o n
4. T e c h n i c a l D e s c r i p t i o n
5. P a r t s L i s t
6. C i r c u i t D i a g r a m
7. G u a r a n t e e

1. General

The type 70 Meter Unit provides comprehensive power supply and metering facilities for the Dymar range of Plug-In Laboratory Instruments.

The Meter Unit is available in both bench top and rack mounting versions. Electronically both versions are identical, consequently, the circuit diagram supplied applies to either version.

2. Specification:-

Meter:	Precision 5" scale movement calibrated to $\pm 1\%$ fitted with anti-parallax mirror.	
Sensitivity:	100 μ A full scale deflection.	
Terminal Impedance:	3.16 Kilohms temperature compensated to better than 0.2% between + 10 + 50°C.	
Scales:	0-10 Linear 0-3.16 Linear -12 to + 2 dbm Logarithmic (0 dbm = 0.775 volts in 600 Ω)	
Power Supply:	Input Taps: 105, 115, 125, 135 Volts AC 210, 220, 230, 240 Volts AC	
Output Voltages:	250 volts DC at 50 mA regulated 12.6 DC at 0.6 A regulated 6.3 volts AC at 1.5A 12.6 volts AC at 0.6A (centre tapped)	
Regulation:	250 volt 1%	12.6 volt 1% at max. rated load
Stability:	1%	1% $\pm$ 10% on Mains voltage.
Ripple Voltages:	10 mV r.m.s. 5 mV r.m.s. All supplies floating with respect to chassis ground.	
<u>Dimensions</u>	Type 70	Type 70/R
Width:	10 $\frac{1}{2}$ "	19"
Depth:	8 $\frac{1}{2}$ "	7 $\frac{3}{4}$ "
Height:	13"	7"
Average weight with Plug-In:	17-lb.	16-lb.

2.

3. Operation:

3.1. Input Voltage: The instrument is supplied with the transformer taps set for 240 Volts AC mains input: for use at other voltages change the input taps to the required voltage as illustrated in Fig.1. Connect the instrument to the mains via the three core lead supplied.

Red = Live Black = Neutral Green = Earth

N.B. Fuse F1 = .5 amp for voltages between 210 and 240.

Fuse F1 = 1 amp for voltages between 105 and 135

3.2. Check with the Meter Unit switched off, that the meter reads zero, if not adjust the mechanical "set zero" on the meter.

3.3. The Meter Unit is now ready for use with any one of the range of Dymar Plug-Ins.

FIG.1.

TRANSFORMER LINKS			VOLTAGE SELECTOR		
+10	105	105	+10	105	105
o	o	o	o	o	o
			o	o	o
o	o	o	o	o	o
0	0	+20	0	0	+20
INPUT VOLTAGE			INPUT VOLTAGE		
	210			105	
	220			115	
	230			125	
	240			135	

0	0	+20
0	0	105/210
0	0	0
0	0	+10

The Voltage Selector is located on the inside chassis adjacent to the Fuse holder.					
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4. Technical Description:-

Meter:

The meter is calibrated to $\pm 1\%$ and has a current sensitivity of 100 micro-amps at full scale deflection. Temperature compensation is provided by means of thermistor TH1 and the Present Potentiometer RV3 sets the Terminal impedance to $3.16K\Omega$. The meter is brought out to pins 8 and 16 of socket SK1.

Power Supplies:

The power supplies available from the Meter Unit are as follows:

- 400 volts DC between pins 12 and 14
- 250 volts DC between pins 13 and 14
- 12.6 volts DC between pins 5 and 6
- 6.3 volts AC between pins 10 and 11
- 12.6 volts AC between pins 2 and 4
centre tapped at pin 3.
- Mains Voltage between pins 1 and 9

The two DC supplies are stabilised by means of conventional series regulator circuits.

The full wave bridge rectifier MR1 - 4 supplies the unregulated H.T. voltage. The triode-pentode V1 is used as the voltage regulator, the pentode being the series valve and the triode its associated drive amplifier. The neon tube V2 provides the reference voltage and H.T. voltage is pre-set to 250 volts DC by means of potentiometer RV1.

The full wave bridge rectifier MR5 - 8 supplies the L.T. regulator. V.T.2. is the series transistor with V.T.3. and V.T.1. setting as the drive amplifiers. Zenor Diode M.R.5. provides the reference voltage and the output voltage of 12.6 volts DC is pre-set by means of Potentiometer RV2.

P A R T S L I S TCIRCUIT REF.DESCRIPTIONR E S I S T O R S

R1.	Carbon	560 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R2.	Carbon	470 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R3.	Carbon	820K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R4.	Carbon	470 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R5.	Carbon	470 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R6.	Carbon	22K Ω	$\pm$ 10%	1W
R7.	Carbon	22K Ω	$\pm$ 10%	1W
R8.	Carbon	220K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R9.	Carbon	100K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R10.	Carbon	4.7K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R11.	Carbon	680 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R12.	Carbon	1K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R13.	Carbon	1K Ω	$\pm$ 10%	$\frac{1}{2}$ W
R14.	Carbon	470 Ω	$\pm$ 10%	$\frac{1}{2}$ W
R15.	Hi-Stab	1.8K Ω	$\pm$ 5%	$\frac{1}{4}$ W
R16.	Carbon	390 Ω	$\pm$ 10%	1W
R17.	Carbon	AOT	$\pm$ 10%	$\frac{1}{2}$ W

RV1.	Resistor Variable Carbon Linear	20K Ω
RV2.	Resistor Variable Carbon Linear	500 Ω
RV3.	Resistor Variable Carbon Linear	500 Ω

C A P A C I T O R S

C1/C2.	Dula Electrlytic	16+ 16 μ F	450V
C3.	Polyester	0.1 μ F	400V
C4.	Electrolytic	8 μ F	350V
C5.	Electrolytic	1250 μ F	40V
C6.	Polyester	.01 μ F	160V
C7.	Electrolytic	125 μ F	16V
C8.	Electrolytic	250 μ F	16V
C9.	Polyester	0.1 μ F	160V

CIRCUIT REF.

DESCRIPTION

VALVES

V1.	Triode Pentode ECL82	Mullard
V2.	Neon Tube 85A2	"

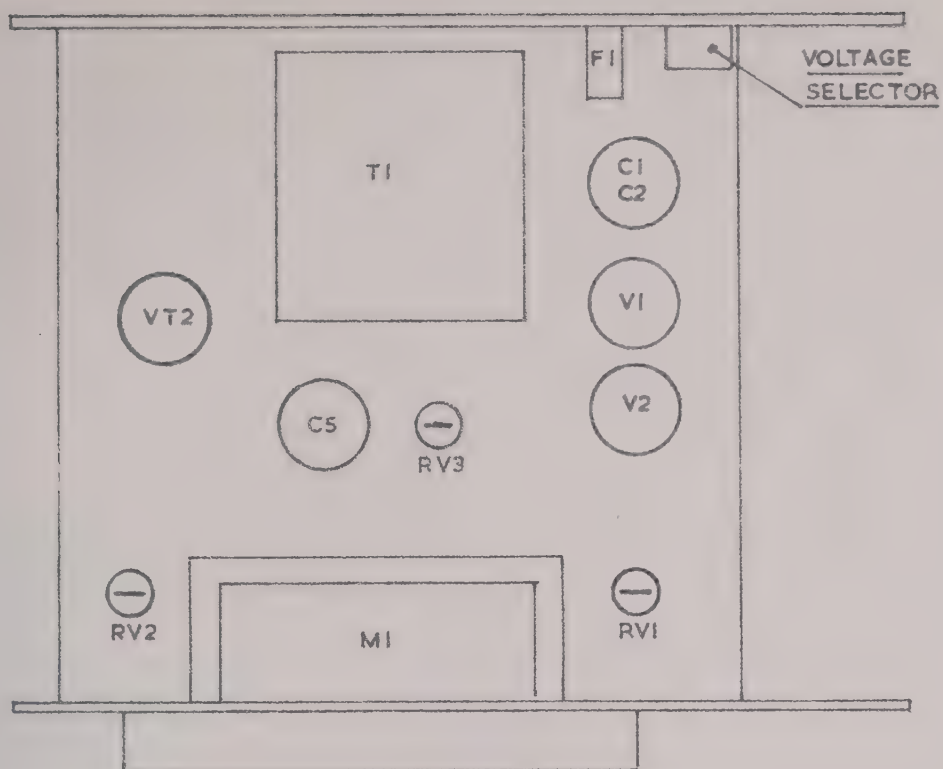
SEMICONDUCTORS

MR1/4	Silicon Diode BY114	Mullard
MR5	Selenium Rectifier	FSE 2461B STC
MR6	Zener Diode MR162H	A.E.I.

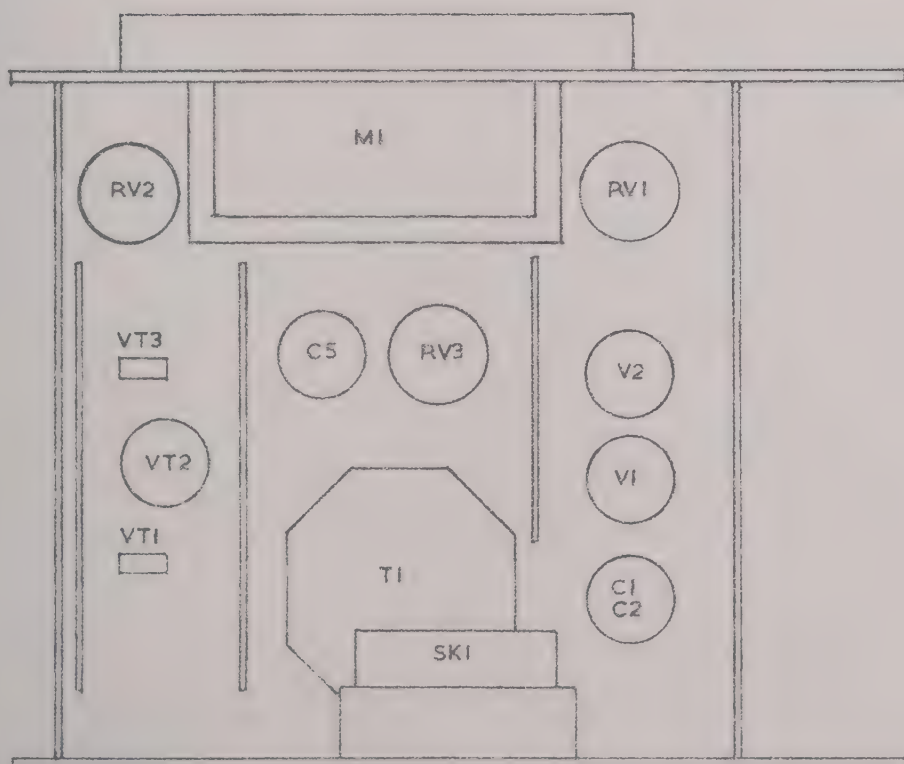
VT1	Germanium Transistor OC83	Mullard
VT2	" " OC35	"
VT3	" " OC83	"

MISCELLANEOUS

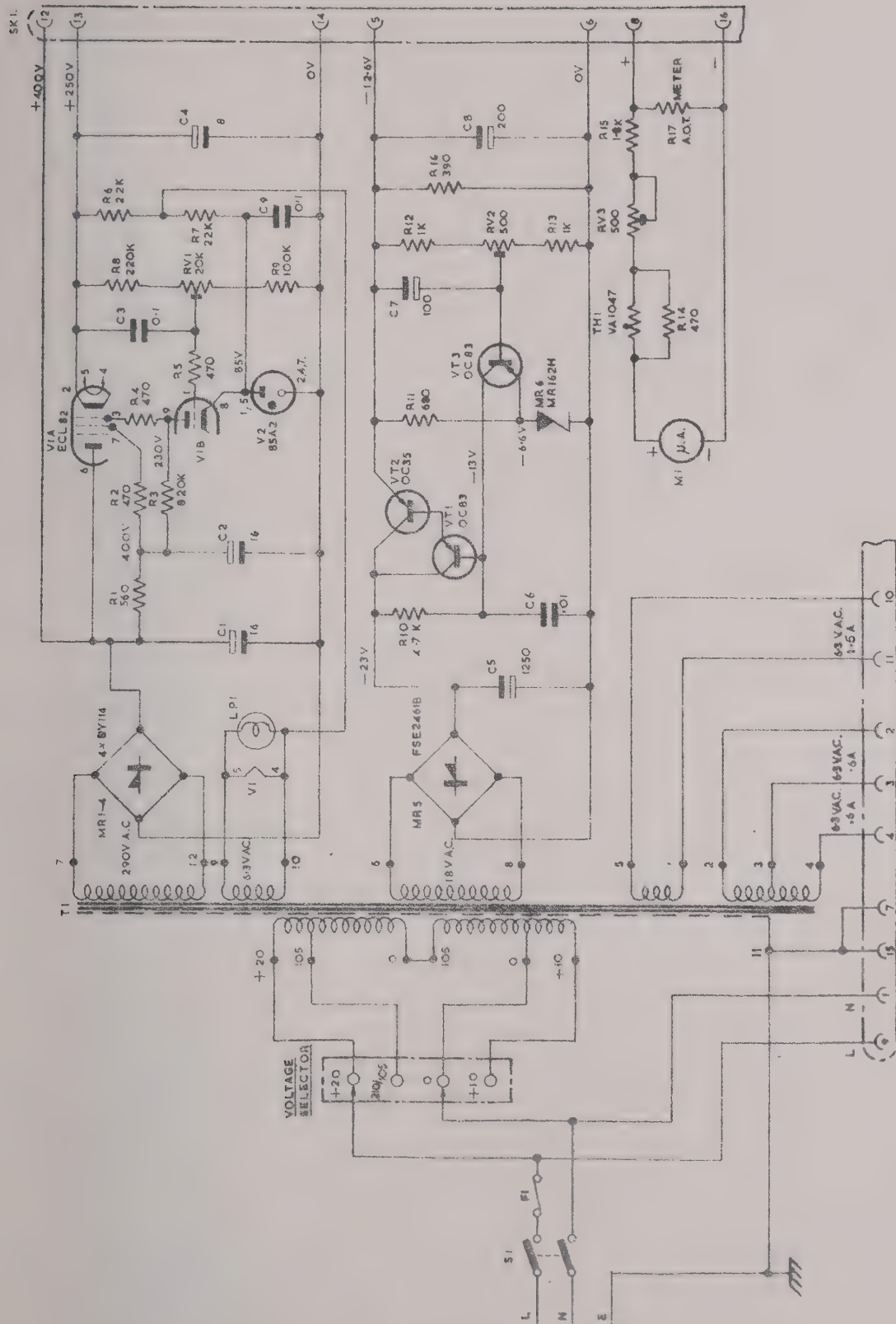
TH1	Thermistor VA1047	Mullard
T1.	Transformer Drg. No. BT.1021	Dymar
M1.	Meter Drg. No. BS.1154	Dymar
SK1.	Socket 16 way RSD16	McMurdo
SW1.	Switch Double Pole S277PD	Bulgin
F1.	Fuse Link 1 Amp F300/1A	Bulgin
LP1.	Lamp 6.3V 1W L.E.S.	



VIEW ON TOP OF CHASSIS



VIEW UNDER CHASSIS



METER UNIT TYPE 70 & 70/R

VOLTAGES SHOWN ARE TYPICAL FOR AN AVERAGE INSTRUMENT

G U A R A N T E E

In lieu of any warranty, condition or liability implied by law, our liability in respect of any defect in or failure of the goods supplied, is limited to making good by replacement or repair defects which, under proper use by the original purchaser, appear therein and arise solely from faulty materials or workmanship within a period of twelve calendar months after the original goods shall have first been dispatched, at the termination of which period all liability on our part ceases; provided always that such defective instruments are carefully packed and returned free to our Works unless otherwise arranged, and provided that they have not been tampered with in any way.

For components not of our manufacture we extend only such benefits as we may receive under any guarantee given to us by the makers thereof.

The liability of the Company for consequential loss or damage suffered by the Purchaser of the goods supplied by it, however sustained is hereby expressly excluded.

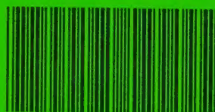
Our equipment has been designed and tested for use with the specific types of components supplied by us therein and no responsibility can be accepted for the performance of the equipment if other components are employed.

In the event of failure or malfunctioning of any equipment supplied by us please contact our Service Department, at the below stated address and give full details of the fault together with the Type and Serial Number of the equipment in question.

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Watford, Herts.
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Telephone: WATFORD 21297/8/9

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